for applying a voltage to the sample which is scanned by the electron beam, a current detecting means for detecting a current flowing in the sample as the result of the electron beam that flows as an electric current through the sample to said voltage applying means because of the applied voltage, and a position detecting means for detecting the position of the portion to be measured with reference to the scanning start position of the electron beam and the position when the detected current changes, the position of the portion to be measured being detected without detecting secondary electrons and reflected electrons.--

Amend claim 7 as follows:

--7. (amended) A position detecting method comprising the step of irradiating an electron beam to a sample including a portion to be measured, relatively scanning the electron beam to cause the electron beam to move in relation to the portion to be measured in the sample, applying a voltage to the sample which is scanned by the electron beam, detecting a current flowing in the sample as the result of the electron beam that flows as an electric current through the sample to said voltage applying means because of the applied voltage, and detecting the position of the portion to be measured with reference to a scanning start position of the electron beam and the position where the detected current changes, the position of the portion to be measured being detected without detecting secondary electrons and reflected electrons.--

Add the following new claims:

--13. A position detecting system claimed in Claim 1, wherein the voltage applying means applies the voltage to a bottom of said sample which is scanned by said electron beam.

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--14. A position detecting system claimed in Claim 1, wherein the current detecting means detects said current flowing in the sample from a bottom of said sample which is scanned by the electron beam.

--15. A position detecting system for detecting a position of a bottom of a contact hole in a circuit component having said contact hole through an insulating film on a surface of a silicon substrate, the system comprising a beam irradiating means for irradiating an electron beam toward said surface of said silicon substrate, a beam scanning means for relatively scanning said electron beam so that said electron beam moves in relation to said surface of said silicon substrate, a voltage applying means for applying a voltage to a rear surface of said silicon substrate which is scanned by said electron beam, so that when said electron beam is bombarded onto a surface of said insulating film, an electric current does not flow in said silicon substrate, but when said electron beam is bombarded onto said surface of said silicon substrate through said contact hole, an electric current flows in said circuit component as the result of said electron beam that flows as said electric current through said silicon

substrate to said voltage applying means because of the voltage applied to said rear surface of said silicon substrate, a current detecting means for detecting said electric current flowing in said circuit component, at said rear surface of said silicon substrate, and a position detecting means for detecting the position of the bottom of said contact hole, with reference to the scanning start position of said electron beam and the position when the detected current changes, the position of the bottom of said contact hole being detected without detecting secondary electrons and reflected electrons.

a3

--16. A position detecting system claimed in Claim 15, wherein the position detecting means is configured to detect the position of the bottom of said contact hole with reference to the scanning start position of the electron, on the basis of the scanning start time of the electron beam and the detected current changing time.

--17. A position detecting system claimed in Claim 15, further including a size measuring means for measuring the size of the bottom of said contact hole, on the basis of a difference in the coordinates between two positions detected by the position detecting means.

--18. A position detecting system claimed in Claim 15, further including a size measuring means for measuring the size of the bottom of said contact hole, by multiplying a